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EXAMINER

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/721,382  
Filing Date: November 26, 2003  
Appellant(s): TAN ET AL.

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Carl J. Pellegrini  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 6-18-09 appealing from the Office action mailed 10-10-08.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

Appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

Appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,825,062	YEE et al.	11-2004
6,710,430	MINAMIO et al.	3-2004

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 25 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yee (6825062) and Minamio (6710430).

At column 7, line 14 to column 8, line 37; column 9, lines 18-56; column 11, line 48 to column 13, lines 29-53; and column 13, line 59 to column 14, line 20, Yee discloses the following:

Re claim 25: A method of assembling an integrated circuit package, comprising: a) providing: a leadframe 10 having a first face and a second face opposite to said first face, wherein said leadframe comprises: an outer frame portion 18, a die pad portion 16 substantially centrally disposed within said outer frame portion, a plurality of tie bars connecting said die pad portion to said outer frame portion, and a plurality of protuberances 11

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extending substantially radially inward from said outer frame portion, each of said plurality of protuberances comprising an inner lead portion (illustrated in Fig. 3D directly bonded to 3), an outer lead portion (illustrated in Fig. 3D rightwardly adjacent to 14), and a post portion connecting said inner lead portion from said outer lead portion, an integrated circuit chip 2 having a first face and a second face opposite to said first face, a first plurality of wires 3 each having a first end and a second end, and a second plurality of wires 3 each having a first end and a second end; b) disposing an adhesive layer 32 on said first face of said leadframe, whereby said adhesive layer covers said die pad portion, and part of said inner lead portion of each of said plurality of protuberances, wherein part of each of said inner lead portions remains free of adhesive; d) mounting said integrated circuit chip on said leadframe, whereby said second face of said integrated circuit chip is connected to a first face of said die pad portion through said adhesive layer, and whereby said second face of said integrated circuit is further connected to said inner lead portions through said adhesive layer; e) electrically conductively joining said first end of said first plurality of wires to said first face of one of said plurality of inner lead portions; f) electrically conductively joining said second end of each of said first plurality of wires to said first face of said integrated circuit chip; g) electrically conductively joining said first end of each of said second plurality of wires to said first face of one of

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said lead portions, and h) electrically conductively joining said second end of said second plurality of wires to said first face of said integrated circuit chip.

Re claim 26: The method according to claim 25, wherein the adhesive layer disposed on said first face of said lead frame in step (b) covers an outer edge of said die pad portion, and part of said inner lead portion of each of said plurality of protuberances, thereby leaving a part of each of said inner lead portions remains free of adhesive.

The following is further clarified:

Re claim 25: a post portion connecting said inner lead portion from said outer lead portion.

In particular, Yee discloses:

"FIG. 3B illustrates a case in which two dimples [14] are formed at opposite sides of the each [sic] inner lead 12, respectively, in such a fashion that each of them extends partially over an associated peripheral edge of the inner lead 12 and an associated side surface of the inner lead 12. ... FIG. 3D is a cross-sectional view partially illustrating a semiconductor package 1 fabricated using a lead frame (not shown) provided with at least one aperture, in place of the dimple, as the lead lock 14 for each lead."

Therefore, the inner lead portion directly between the two apertures 14 formed at opposite sides of each inner lead 12 is a post portion in the same sense that appellant, in the instant specification at paragraph 48, discloses a "post portion 829."

Furthermore, Yee explicitly discloses any combination of explicitly disclosed embodiments relied on supra because Yee discloses the following:

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"The lead frames shown in FIGS. 1 to 6B can be advantageously used to fabricate bottom lead type semiconductor packages in which the entire lower surface of each inner lead 12 is exposed at the bottom of the resin encapsulate 4, as shown in FIGS. 3C, 3D, 4, 5E, 6A, and 6B, or lead end grid type semiconductor packages in which only the lower surface of the protruded end 19 protruded from the lower surface of each inner lead 12 is exposed at the bottom of the resin encapsulate 4, as shown in FIGS. 7A to 7D."

Additionally, 37 CFR 1.84(p)(4) states:

The same part of an invention appearing in more than one view of the drawing must always be designated by the same reference character, and the same reference character must never be used to designate different parts.

Therefore, at least reference characters 1 and 14 designate the same parts throughout the figures.

In any case, it would have been obvious to combine the embodiments of Yee because Yee discloses that they are drawn to the same invention for the same purpose.

However, Yee does not appear to explicitly disclose the following:

Re claim 26: wherein the adhesive layer disposed on said first face of said lead frame in step (b) covers only an outer edge of said die pad portion, thereby leaving a central part of said die pad portion free of adhesive.

Regardless, in the instant claims, the omission of the element of Yee wherein the adhesive layer disposed on said first face of said lead frame in step (b) covers a central part of said die pad portion would have been obvious because omission of a step or an element and its function is obvious if the function of the element is not desired or required.

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See Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989); In re Larson, 340 F.2d 965, 144 USPQ 347 (CCPA 1965); In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975); and MPEP 2144.04IIA.

Also, Yee does not appear to explicitly disclose the following:

Re claim 25: c) severing said outer lead portion from said inner lead portion by cutting said post portion.

Nevertheless, at column 4, lines 58-67; column 8, lines 7-52; column 13, lines 18-39; and column 15, lines 12-22, Minamio discloses severing outer lead portion 14 from inner lead portion 16 by cutting a post portion "Rcnct."

Moreover, it would have been obvious to combine this disclosure of Minamio with the disclosure of Yee because, as disclosed by Minamio, "[I]t is possible to easily obtain a semiconductor device having three or more rows of external terminals'; and, as disclosed by Yee as cited, the lead frame of Yee can be advantageously used to fabricate a bottom lead type semiconductor package such as the package of Minamio.

## **(10) Response to Argument**

Appellant argues:

"Yee ... does **not** disclose the feature of the post portions and severing of the post portions to create dual or more rows of leads without affecting the overall stability of the IC structure. Moreover, the teachings of Yee do not suggest that stability of the package is by reason of the die being mounted onto the die pad and portions of the inner leads as defined in claim 25 of the present application. ... By having post portions which connect the inner leads to the outer leads, and severing the post portions to create dual or (more) rows of leads, mechanical impact on the overall structure is reduced during the severing, thereby maintaining the leads in position and possible



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deformation of the overall structure. Also, the integrated circuit chip being mounted onto the lead frame in a manner such that second face of the chip is connected to the first face of the die pad and a portion of the inner leads, improves stability of the overall IC structure. The combination of both features advantageously provides the desired stability to the overall structure of the IC package and maintains proper position of the leads. ... Yee ... does not suggest any severing of post portions [sic] to create multi-rows of leads surrounding the die pad without affecting the stability of the IC structure and positions of the leads."

These arguments are respectfully traversed because, contrary to appellants assertion otherwise, claim 25 does not define that stability of the package is by reason of the die being mounted onto the die pad and portions of the inner leads, and Yee is not necessarily applied to the rejection for this disclosure.

Similarly, these arguments are respectfully deemed unpersuasive because the scope of the instant claims is not limited to a process to create dual or more rows of leads without affecting the overall stability of the IC structure; or a suggestion that stability of the package is by reason of the die being mounted onto the die pad and portions of the inner leads; or in a process to create dual or (more) rows of leads, mechanical impact on the overall structure is reduced during the severing, thereby maintaining the leads in position and possible deformation of the overall structure; or the integrated circuit chip being mounted onto the lead frame in a manner such that second face of the chip is connected to the first face of the die pad and a portion of the inner leads, improves stability of the overall IC structure; or a process wherein a combination of both features advantageously provides

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the desired stability to the overall structure of the IC package and maintains proper position of the leads; or a suggestion that any severing of post portions to create multi-rows of leads surrounding the die pad without affecting the stability of the IC structure and positions of the leads.

Accordingly, Yee is not necessarily applied to the rejection for these disclosures.

Appellant also alleges:

"Minamio, however, does not teach or suggest that the connecting portion (post portion) between the first and third leads (i.e., inner and outer leads) is designed such that severing thereof would maintain stability to the structure and maintain the position of the leads. ... Minamio also does not disclose the integrated circuit chip being mounted onto the leadframe in a manner such that the second face of the chip is connected to the first face of the die pad and a portion of the inner leads to maintain stability of the structure."

These allegations are respectfully deemed unpersuasive because the scope of the instant claims is not limited to a teaching or suggestion that the connecting portion (post portion) between the first and third leads (i.e., inner and outer leads) is designed such that severing thereof would maintain stability to the structure and maintain the position of the leads, or the integrated circuit chip being mounted onto the leadframe in a manner such that the second face of the chip is connected to the first face of the die pad and a portion of the inner leads to maintain stability of the structure. Furthermore, Yee is not necessarily applied to the rejection for these disclosures.

In addition, appellant contends:

"The severing of the connecting portions in Minamio merely functions to separate the first and third leads so that cross talk can be prevented. ... If the skilled artisan were to refer to Minamio for guidance, with the aim of providing stability and maintaining positions of the leads in multi-row lead frame packages, he would be looking into developing neck portions or stepped portions which are taught by Minamio to maintain stability, and would clearly not have arrived at the combination of steps involving severing of post portions and die mounting on both the die pad and part of the inner leads, to provide stability to the overall IC package and maintain proper positions of the leads."

These contentions are respectfully deemed unpersuasive because they are unsupported by proof or a showing of facts; hence, they essentially amount to mere conjecture and are of no probative value. See MPEP 716.01(c), and, *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989) (statement in publication dismissing the "preliminary identification of a human b - NGF - like molecule" in the prior art, even if considered to be an expert opinion, was inadequate to overcome the rejection based on that prior art because there was no factual evidence supporting the statement); *In re Beattie*, 974 F.2d 1309, 24 USPQ2d 1040 (Fed. Cir. 1992) (declarations of seven persons skilled in the art offering opinion evidence praising the merits of the claimed invention were found to have little value because of a lack of factual support); *Ex parte George*, 21 USPQ2d 1058 (Bd. Pat. App. & Inter. 1991) (conclusory statements that results were "unexpected," unsupported by objective factual evidence, were considered but were not found to be of substantial evidentiary value).

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These contentions are also deemed unpersuasive because the rationale to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by appellant.

See MPEP 2144 and *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991).

Appellant further asserts:

"[O]ne of skilled in the art, would not have been motivated to combine the teachings of Minamio with Yee to arrive at the method as defined by claim 25."

This assertion is respectfully traversed because motivation to combine the applied prior art is unnecessary:

"The obviousness inquiry cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents." *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007).

Similarly, as expounded in *Ex parte Jones*, 62 USPQ2d 1206

(*BdPatApp&Int* 2001):

"The applicant and the examiner have apparently assumed that there always must be 'motivation' to combine teachings of the prior art to support a rejection based on §103(a). The assumption is not correct. The word 'motivation' or a word similar to 'motivation' does not appear in 35 U.S.C. § 103(a). While a finding of 'motivation' supported by substantial evidence probably will support combining teachings of different prior art references to establish a *prima facie* obviousness case, it is not always necessary. For example, where a claimed apparatus requiring Phillips head screws differs from a prior art apparatus describing the use of flathead screws, it might be hard to find motivation to substitute flathead screws with Phillips head screws to arrive at the claimed invention. However, the prior art would make

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it more than clear that Phillips head screws and flathead screws are viable alternatives serving the same purpose. Hence, the prior art would 'suggest' substitution of flathead screws for Phillips head screws albeit the prior art might not 'motivate' use of Phillips head screws in place of flathead screws. What must be established to sustain an obviousness rejection is a legally sufficient rationale as to why the claimed subject matter, as a whole, would have been obvious notwithstanding a difference between claimed subject matter and a reference which is prior art under 35 U.S.C. § 102. Once a difference is found to exist, then the examiner must articulate a legally sufficient rationale in support of a §103(a) rejection."

To this end, the instant Office action provides legally sufficient rationale as to why the claimed subject matter, as a whole, would have been obvious, namely:

"[I]t would have been obvious to combine this disclosure of Minamio with the disclosure of Yee because, as disclosed by Minamio, '[I]t is possible to easily obtain a semiconductor device having three or more rows of external terminals'; and, as disclosed by Yee as cited, the lead frames of Yee can be advantageously used to fabricate bottom lead type semiconductor packages such as the package of Minamio."

### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/David E Graybill/

Primary Examiner, Art Unit 2894

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